frequently been the case, from information derived from native collectors.

Personally, Sir Walter Elliot was one of the kindliest of men, with a charming manner and generous disposition. At Wolfelee, as formerly in India, he was widely known and universally respected. W. T. B.

NOTES

He must be a very dull Englishman whose imagination has not been touched by the assembling of the Colonial Conference, an event which may hereafter be seen to have marked the first stage in one of the greatest movements in the history of mankind. In describing the commercial relations of the colonies, Sir Henry Holland, in his opening speech as President, had occasion to bring some very eloquent figures to the notice of the Conference. The imports and exports of the colonies were, in 1885, eleven times what they were in 1837. The British shipping trade with the colonies rose from 3,700,000 tons in 1837 to 56,600,000 tons in 1885, while, in the same period, British exports to the colonies rose from 11,300,000*l.* to 54,500,000*l.* This astonishing material progress, accompanied by an increase of population from 4,204,700 in all the colonies in 1837 to 15,763,072 in 1881, would, of course, have been impossible but for the rapid development of physical science and the steadily increasing application of its principles to the methods of industry. And it is interesting to note that, of all the questions which the Conference will have to discuss, by far the greatest are those most directly connected with the results of scientific investigation—questions relating to the naval and military defence of the Empire, and to the improvement of postal and telegraphic communication. In speaking of telegraphic communication, Sir Henry Holland quoted a striking letter he had received from Mr. Pender. Some of the facts brought together in this letter must have reminded the delegates very vividly of the debt which commerce owes to science. Twenty years ago there were only about 2000 miles of submarine cables, and some of the earlier cables were so badly constructed that they were practically useless. "Science has now, however," wrote Mr. Pender, "aided so greatly in the manufacture of cables that they can at the present time be laid with comparatively little risk of breakage and with an almost certainty of efficient repair." The consequence is that there are now 107,000 miles of submarine cables, which have cost something like thirty-seven millions sterling. The whole of this vast system, with the exception of about 7000 miles, is entirely under British control. To show the relative importance of the submarine cables, Mr. Pender stated that the length of all the land telegraphic lines now in existence in the world is about 1,750,000 miles, representing an estimated cost of 52,000,000*l.*

Dr. Brown-Sequard has been elected President of the Society of Biology, Paris. His immediate predecessor was the late M. Paul Bert.

A Bill was lately submitted to the U.S. Senate, providing for the creation of a Department of Agriculture and Labour. Various amendments were proposed, and among them was one for the transfer of the Weather Bureau from the Signal Office of the Army to the new Department. This amendment was accepted by the Committee on Agriculture, and *Science* says that it would certainly have been passed by the Senate had not difficulties unexpectedly arisen with regard to the Bill as a whole. The President, it seems, did not wish to have an additional member in his Cabinet. The Bill was therefore referred back to the Committee on Agriculture, and it did not again come before the House. According to *Science*, there can be no doubt that the Bureau will be transferred next year to some Civil Department, public opinion being decidedly in favour of the change. In the meantime General Greely, General Hazen's successor, will retain the position of Chief Signal Officer.

In the Report of the Scottish Meteorological Society, to which we referred last week, it is stated that during the winter Mr. Cunningham, Superintendent of the Zoological Laboratory of the Marine Station at Granton, and Mr. Ramage, have been continually engaged in a systematic study of the Chætopoda of the Firth of Forth. In the course of this work all the specimens obtained by dredging have been determined, and their anatomy has been investigated. Fresh specimens, and ova and young forms, have been collected on the shore at low tide, and by means of low nets; and a large number of drawings and descriptions have been made, among which are accounts of some species new to the district, and additions to the knowledge of anatomy and development. The results of this work are being prepared for publication.

The Report for the year 1884 of the United States National Museum, under the direction of the Smithsonian Institution, has just been issued. It contains (1) the Report of the Assistant Director, (2) Reports of the Curator and Acting-Curators, (3) papers based on collections in the Museum, (4) bibliography of the Museum for 1884, and (5) a list of accessions to the Museum in 1884. Among the papers based on collections in the Museum are two admirable anthropological studies by Mr. Otis T. Mason—one on throwing-sticks, another on the basket-work of the North-American aborigines. There is also an excellent study, by Mr. John Murdoch, of the Eskimo bows in the Museum. These papers are carefully illustrated.

On March 9 a Conference met in the Senate House, Cambridge, to discuss various questions in connexion with the Cambridge University Local Lectures. A report of the proceedings has been printed for the Syndics at the University Press, and it ought to be read by all who are interested in the subject of University Extension. Attention may especially be called to a speech by Dr. Westcott, who argued with much force that the affiliation of local centres to the University might provide an adequate foundation for a national system of higher education. Mr. Browne, Secretary of the Syndicate, who made a financial statement, set forth the claims of the movement to the support of all "who feel that the University Extension system has great powers for good, and has already done excellent work."

Science and Art, the first number of which has just been issued, deserves, and will no doubt receive, a cordial welcome from the class of readers to whom it appeals. Its principal object is to bring the schools of science and art into closer contact with one another. The articles, notes, and correspondence will be on subjects likely to be of especial interest to teachers in those schools, and it is also hoped that the journal may be of benefit to students. Each issue is to contain test-questions in science and art subjects, for which prizes of books and instruments will be given.

On Tuesday last Messrs. Mourlen, Belgian electricians, had an interview at Brussels with M. Granet, the French Minister of Posts and Telegraphs, relative to the establishment of a telephone line from Paris to London.

An excellent "General Guide" to the Natural History Museum, Cromwell Road, has just been printed by order of the Trustees. It contains plans and a view of the building.

Mr. T. B. Coombe Williams has compiled an interesting bibliography of the books, in his own library, on fancy pigeons. The authorship of the works in his list may, he says, be apportioned as follows: English writers, 58; German (including translations), 45; French, 21; Dutch, 3; Latin, 3; Italian, 5; Spanish, 1; Arabic, 1. More books on this subject have been printed in English and German than in any other language.

IN a recent Bulletin of the U.S. Fish Commission, Mr. J. W. Collins describes the finding of a knife of curious workmanship in the thick flesh of a large cod. The "find" was made at Gloucester, Mass., on September 15, 1886, by Capt. John Q. Getchell, when discharging a fare of codfish from his schooner. He had lifted several fish from a tub, and, running his hand over the thicker portion of one of them to call the attention of the by-standers to its fatness, he felt something hard beneath his fingers. Further examination produced a knife. The handle of the knife is of brass, curved and tapering posteriorly, with a longitudinal incision, on the concave side, to receive the edge of the blade. The form is remarkable, and suggests "the handiwork of some savage tribe, or the scrimshaw work of a sailor." The blade, which is of a lanceolate shape, has been corroded a good deal, and the extreme point is very thin. The total length of handle and blade together is 6¼ inches. "As to where the fish got the knife," says Mr. Collins, "we can only conjecture, unless some ethnologist can point out its origin. In any case, the finding of such a remarkable implement in such a strange place must be a matter of interest to the ethnologist and naturalist alike."

THE Colonial Council of Cochin China has decided to grant a sum of 6000 francs a year for life to M. Pierre, the Director of the Botanical Gardens at Saigon, provided he undertakes to finish in Paris the publication of his "Flore de la Cochinchine," and will leave all the manuscripts and collections which he has employed in the preparation of this work to the colony. The same body has granted La Société des Études Indo-Chinoises a subvention of a thousand francs to aid in the publication of its *Bulletin*.

WE have received the numbers of the *Essex Naturalist*, the journal of the Essex Field Club, for January, February, and March of the present year. The steady growth of the Club has led the Council to decide upon the issue of a monthly journal in place of the former Transactions and Proceedings at irregular intervals. It is scarcely surprising that residents of the county of Essex should appreciate the labours of the Society, inasmuch as they are wholly devoted to the county, and are of interest even to persons who know little of Essex. In this respect—namely, the thorough examination of the district lying at their doors—the members of the Essex Field Club set an example that similar Societies elsewhere would do well to follow. Anything relating to the natural history, geology, and prehistoric archæology of Essex is welcomed. Thus, amongst the papers in the three numbers before us, we have a discussion on a curious subsidence near Colchester in 1862; a report on the flowering plants in the neighbourhood of Colchester, by Mr. Shenstone, which is a kind of supplement for that particular district to Gibson's "Flora of Essex," published twenty years ago; notes on the saffron plant in England and its connection with the name of Saffron Walden; a paper on primæval man in the valley of the Lea, by Mr. Worthington Smith; and a paper on the deer of Epping Forest, by Mr. Harting. Apart from a succession of papers such as these, it is scarcely necessary to remind readers of NATURE of such excellent special work as Prof. Meldola and Mr. White's report on the East Anglian earthquake of April 1884, published by the Society. There are few associations in the United Kingdom which perform so adequately and thoroughly the proper functions of a local Field Club or Naturalists' Society, as the Essex Field Club.

EARTHQUAKES are reported from Travnik, in Bosnia, where a shock, lasting for five seconds, and followed by two others, was felt on March 22, about 3 a.m. On March 23 three shocks were noticed about 11.15 a.m. at Campfer and St. Moritz (Grisons). At Stuttgart, on March 25, about 4 a.m., a perpendicular shock was felt in the direction from west to east, followed by oscillations continuing for ten seconds. At Savona, in Italy, an earthquake was noticed about the same time. According to a telegram from Aden, dated the 5th inst., shocks of earthquake had been repeatedly felt there during the previous four days, but no damage had been reported.

MR. EDWARD WOODS, President of the Institution of Civil Engineers, will give a *conversazione* on Wednesday, May 25 (Derby Day). It will take place in the South Kensington Museum by permission of the Lords of the Committee of Council on Education.

THE semi-centennial anniversary of the University of Louisville was celebrated on March 2. The doctorate address on the occasion was delivered by Dr. David W. Yandell, who offered some interesting reminiscences of teachers of medicine in the University. When the institution was founded, it was the fourth medical school west of the Alleghanies. "There are as many schools now in Louisville alone," said Dr. Yandell, "as were then in all the territory which extended from the Ohio River to the Pacific Ocean." Dr. Yandell claimed on behalf of the University that it is "a school where practical medicine is taught in all its branches in a thorough, practical way." "It points to its record with becoming pride, and finds there its guerdon and its hope for the future."

ON April 1 the fine Botanic Garden of Glasgow passed from the hands of the shareholders of the Royal Botanic Institution into the possession of the Corporation of Glasgow. The Garden was founded in 1816. Shortly after this date the Botanic Institution received a Royal Charter, and in consideration of the importance of the teaching of botany in the University, as well as for the general encouragement of the study of this science, a sum of 2000*l*. was granted from the Treasury. A further sum of 2000*l*. was advanced by the University of Glasgow, on condition that special facilities should be given to the Professor of Botany in the University for teaching his science; and it need hardly be said that from this point of view the maintenance of the Garden is of primary importance. The financial history of the Garden has at no time been fully satisfactory, and the Institution has at the end of seventy years found itself in the position of a debtor to the Corporation to the extent of 46,000*l*. The greater part of this sum has been expended in recent years in the erection of fine conservatories, which, in point of condition and extent, place the Garden at the head of provincial establishments. The collections of plants date back to the foundation of the Institution, but the bulk of them have been acquired within the last ten years, very large and valuable donations having been received from Kew, Edinburgh, and Glasnevin, while large contributions have also been made by the leading growers throughout the country. Owing to peculiar municipal complications, following on the totally unexpected rejection of a Bill in Parliament for the annexation of Hillhead and Kelvinside to the city of Glasgow, by a Committee of the Lords, after it had passed through the House of Commons, it is as yet uncertain what line of action the Corporation may adopt with regard to this valuable property which has fallen into their hands. It is in their power to disperse the collections, sell the fine and costly houses, and dispose of the twenty-three acres of land for building-purposes. This course would be deplored not only by the citizens of Glasgow, who would thus lose for ever a most picturesque open space, but also by all who are interested in the botanical progress of the country. Were the establishment maintained on its present footing as a Botanic Garden, the Corporation would do credit to itself, and would materially assist in the advance of that which has always been the most generally popular of the sciences. Already the Corporation has shown that it is disposed to further botanical science by admitting students of the University to the Gardens under certain conditions, while the gates are locked to the general public. It is earnestly to be hoped that this may be the first step towards a permanent policy of encouragement of the study of botany in one of the most densely populated centres in the United Kingdom.

SOME of the American whitefish (*Coregonus albus*) turned into the waters of the Marquess of Exeter at Burghley Park a year ago, were lately caught. They were 7 inches long. This is important evidence as to their adaptability to English waters. The National Fish-Culture Association are incubating a large quantity of the ova of this species for acclimatisation purposes.

SINCE 1878 the Ontario and Western Railway Company has been engaged in re-stocking streams in America within the area of its route. Mr. J. C. Anderson, general freight and passenger agent of the Company, writes to the *American Angler* to the effect that, within the past nine years, 2,220,000 trout have been planted by the Company in the Beaverkill, Willowemoc, Neversink, the east and west branch of the Delaware, and their tributaries.

WE have received vols. xxxix. and xl. of the Proceedings of the Literary and Philosophical Society of Liverpool, containing the principal papers read to the Society during the Sessions 1884-85 and 1885-86. Among the papers of scientific interest in vol. xxxix. are: "Observations on the Nematocysts of *Hydra fusca*," and "The Relationship of Palæontology to Biology," by Mr. R. J. H. Gibson; "On a New Organ of Respiration in the Tunicata," and other papers, by Dr. W. A. Herdman; two papers on "Technical Education," by Mr. F. H. Edwards; "The Armorial Bearings of the Isle of Man, their Origin, History, and Meaning," by Mr. John Newton, and "On the Rocky Mountain Goat," by Mr. T. J. Moore. Vol. xl. contains an address on "Modern Scientific Theories of Man," by the President, Dr. William Carter; "Two Curious Papyri in the Khedivial Museum," by Mr. R. L. Benas; "Recent Locust Plagues in Cyprus and North America," by Dr. Nevins; and "Report on a Successful Importation of Living Soles to the United States," by Mr. T. J. Moore. With vol. xl. is bound "The First Report upon the Fauna of Liverpool Bay and the Neighbouring Seas," written by the members of the Liverpool Marine Biology Committee, and edited by Dr. W. A. Herdman.

THE additions to the Zoological Society's Gardens during the past week include two Macaque Monkeys (*Macacus cynomolgus* ♂ ♂) from India, presented respectively by Mr. W. Spooner and Mr. F. A. Adeney; a Purple-faced Monkey (*Semnopithecus leucoprymnus* ♂) from Ceylon, presented by Mr. W. H. Markham; a Black-tailed Godwit (*Limosa ægocephala*), British, presented by Mr. Robert Barclay; a Common Guillemot (*Lomvia troile*), British, presented by Mr. Howard Bunn; a Ring-hals Snake (*Sepedon hæmachates*) from South Africa, presented by Mr. W. L. Holms; a Pinche Monkey (*Midas œdipus*) from Central America, deposited; two Blue-bonnet Parrakeets (*Psephotus hæmatogaster*) from Australia; two Blue-crowned Conures (*Conurus hæmorrhous*) from Brazil, purchased; two Viscachas (*Lagostomus trichodactylus*) born in the Gardens.

OUR ASTRONOMICAL COLUMN

BARON D'ENGELHARDT'S OBSERVATORY.—Baron D'Engelhardt has recently published the first volume of the results of the astronomical observations obtained at his private observatory in Dresden. At first the observatory was erected in the Rue Leubnitz, but was found to be too far from the dwelling-house, and in 1879 the present edifice was erected in the Rue Liebig, close to the Baron's residence, with which it is connected by a covered gallery. The observatory is very completely fitted up. The principal instrument is a fine equatorial by Grubb of 12 inches aperture, replacing one of 8 inches which had been erected in the first observatory. There are two sidereal clocks, a chronograph, a transit-instrument of the bent form, which replaces one by Cook, a very complete Repsold micrometer, and two comet-seekers of special construction. The conduct of the screw of the Repsold micrometer has been very carefully investigated and the inquiry occupies a dozen pages. The observations are principally micrometer measures of nebulæ and star-clusters; but besides these there are very many observations of comets and minor planets, of the phenomena of Jupiter's satellites and of the new stars in the great nebula of Andromeda and near χ_1 Orionis, besides meridian observations of the moon and culminator stars. The volume, which is a very handsome one, contains four plates representing different parts of the observatory. The geographical position of the centre of the transit-instrument is given as lat. = 51° 2′ 19″ N., and long. = 0h. 54m. 54·74s. East from Greenwich.

NEW RED STAR.—Circular No. 16 of the Liverpool Astronomical Society states that on the nights of March 23 and 27 a red star, 7·5 magnitude, was observed 5s. *f* and 3′ *s* of 26 Cygni. There is no star in the D.M. at this place. The spectrum of the new star is a fine specimen of type III. Place of 26 Cygni for 1887, R.A. 19h. 58m. 9s., Decl. 49° 46′·9 N.

THE PARALLAX OF Σ 1516.—It appears, from the researches of M. O. Struve on the relative motion of the components of this double star, that the fainter star does not participate in the proper motion of the brighter component, and that they therefore, in all probability, constitute a merely optical pair without physical connexion. Herr Berberich, from a discussion of a series of measures of distances made by Prof. Winnecke, found the relative parallax of the brighter star, compared with the fainter component, to be $0''{\cdot}199 \pm 0''{\cdot}05$ (*Astron. Nachr.*, No. 2624). Recently, Dr. L. de Ball has made a series of observations with the equatorial of the Cointe Observatory at Liège, extending from 1885 April to 1886 June, for the purpose of determining this quantity. From sixty-seven observations of relative position-angle he finds $\pi = 0''{\cdot}091$, and from sixty-four observations of relative distance, $\pi = 0''{\cdot}112$, and combining these according to their respective weights, $\pi = 0''{\cdot}104$, with mean error $\pm 0''{\cdot}008$.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 APRIL 10-16

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on April 10

Sun rises, 5h. 18m.; souths, 12h. 1m. 21·4s.; sets, 18h. 45m.; decl. on meridian, 7° 56′ N.: Sidereal Time at Sunset, 8h. 0m.

Moon (at Last Quarter on April 15) rises, 20h. 34m.*; souths, 1h. 47m.; sets, 6h. 50m.; decl. on meridian, 11° 44′ S.

Planet	Rises	Souths	Sets	Decl. on meridian
	h. m.	h. m.	h. m.	° ′
Mercury	4 42	10 30	16 18	3 8 S.
Venus	6 15	13 59	21 43	18 32 N.
Mars	5 25	12 14	19 3	8 47 N.
Jupiter	19 44*	0 51	5 58	10 55 S.
Saturn	9 46	17 55	2 4*	22 28 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Occultations of Stars by the Moon (visible at Greenwich)

April	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image
			h. m.	h. m.	° °
11	49 Libræ	5½	0 13	near approach	318 —
12	29 Ophiuchi	6	1 16	2 19	24 274
15	57 Sagittarii	5½	2 56	4 9	79 238

April	h.	
15	3	Mercury at greatest distance from the Sun.